

SWIM Connect 2015

Getting SWIM Data: Onboarding to SWIM

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Date: November 2, 2015



Federal Aviation
Administration

The SWIM connect 2015 logo is centered within a large white circle on a blue background. The word "SWIM" is in a large, bold, black sans-serif font. To its right are three blue circles of varying sizes. Below "SWIM", the words "connect 2015" are written in a smaller, black, lowercase sans-serif font. The entire logo is set against a blue background with abstract, overlapping circular shapes in various shades of blue.

SWIM Background and Benefits

- Replaces unique interfaces with modern standards-based data exchange
- Provides stakeholders with access to FAA data without having to connect directly to individual systems
- Facilitates leveraging a single interface to receive multiple data products
- Establishes a single point of contact for FAA data
- Establishes Enterprise Help Desk for SWIM operational consumer calls
- More information provided at:
 - <http://www.faa.gov/nextgen/swim>

SWIM Data Product Availability (Current)

Access Agreement Portal at <http://data.faa.gov> to register and request access.

Producer	Description	NSRR Business Service Name	Data.faa.gov
ITWS	Integrated Terminal Weather System (ITWS) provides a variety of weather information in graphic and textual forms, such as windshear and microburst predictions, storm cell and lightning information, and terminal area winds aloft	SWIM ITWS Subscription	Integrated Terminal Weather
TFMS	Traffic Flow Management (TFMS) will provide Aircraft Situation Display (ASDI) data, which will include aircraft scheduling, routing, and positional information	TFMData: Flight Data	Traffic Flow Management Data
		TFMData: Flow Data	
STDDS	SWIM Terminal Data Distribution System (STDDS) provides surface movement data (ASDE-X), Runway Visual Range (RVR), and a variety of departure event data	Surface Movement Event (SMES)	Surface Movement Event
		Airport Data (APDS)	Airport Data
AIM FNS	Provides Notice to Airmen (NOTAMs)	FNS NOTAM Distribution	Digital Notice to Airmen (NOTAMs)
SFDPS	SWIM Flight Data Publication Service (SFDPS) will provide a variety of En Route flight data, such as flight plans, beacon codes, and handoff status. SFDPS will also disseminate data regarding airspaces, such as Sector configuration data, route status, Special Activity Airspace (SAA) status, and altimeter settings.	En Route Flight Data Publication	En Route Flight and Related Data
		En Route Airspace Data Publication	
		En Route Operational Data Publication	
		En Route General Message Publication	

SWIM Data Product Availability (Future)

Products scheduled for consumption by external entities and listed on the Access Agreement Portal in 2016 or beyond.

Producer	Description	NSRR Business Service Name
AIM-M Segment 2	AIMM Segment 2 (S2) will modernize the ingestion, integration, management, and distribution of aeronautical information (AI) by establishing the Aeronautical Common Services (ACS) and a one-stop-shop (OSS) customer portal. ACS and OSS will streamline dissemination and updates to Airport reference and configuration data, SAA/ SUA, FNS, and other types of AI information.	TBD
AIM SAA	Provides Airport reference and configuration data, including: definitions and schedule information for Special Activity Airspace (SAA), Temporary Flight Restriction (TFR), procedure (RNAV/RNP) data, and obstacles.	Get Static SAA
		SAA Operational Schedule
		SAA Schedule Notification
CSS-Wx	CSS-Wx will modernize, centralize and streamline distribution of weather within the NAS. CSS-Wx will replace with NEMS-based SOA Services existing data feeds from ITWS, CIWS, EWD, WMSCR, and WARP.	TBD

SWIM Data Product Availability (Future)

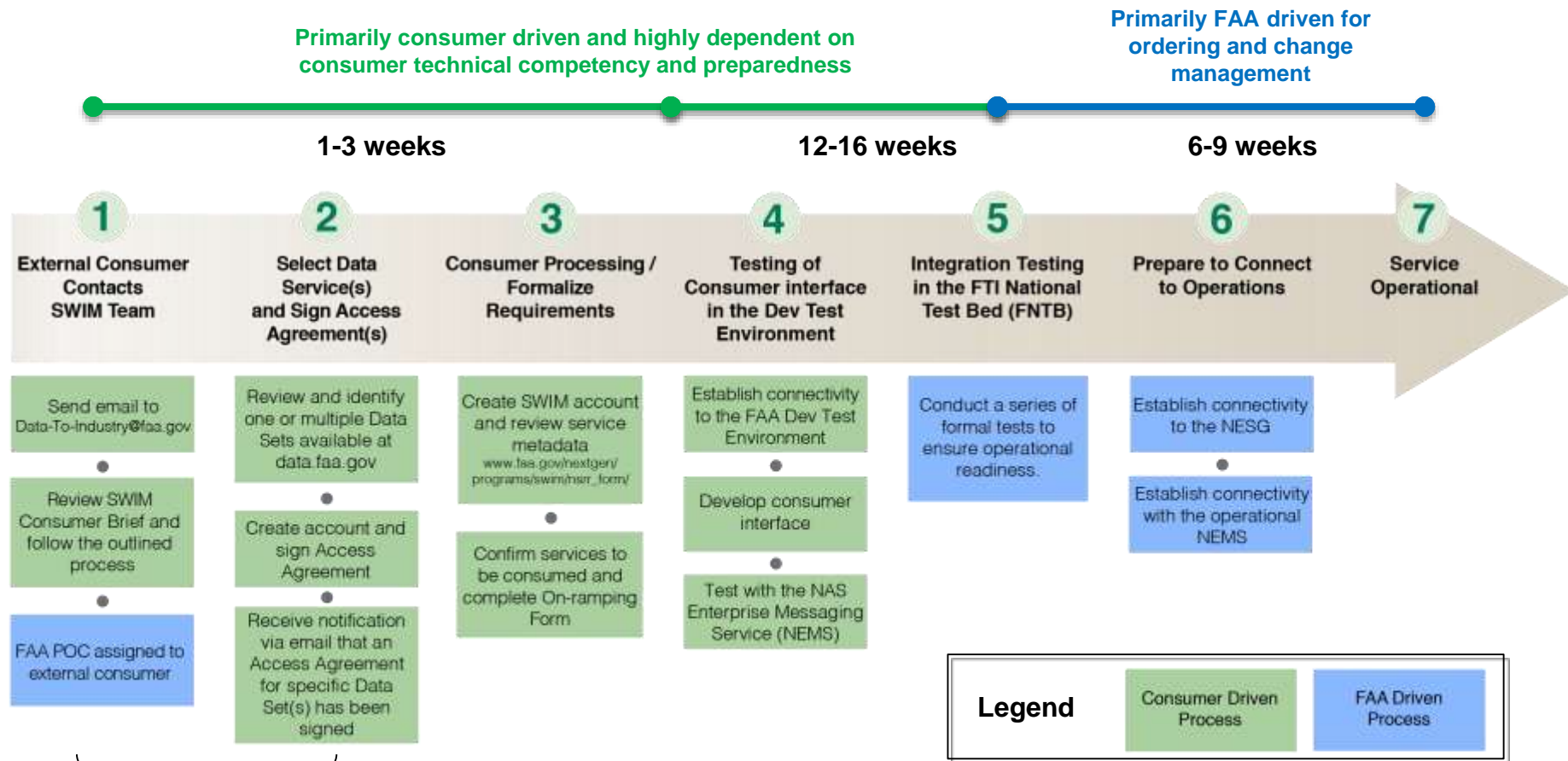
Products scheduled to be available for consumption by external entities and listed on the Access Agreement Portal in 2016 or beyond.

Producer	Description	NSRR Business Service Name
STARS/ STDDS	Disseminate Standard Terminal Automation Replacement System (STARS) data via the NEMS	Terminal Automation Information Service (TAIS)
TBFM	Time Based Flow Management (TBFM) will provide a variety of aircraft metering information, airport configuration and adaptation data.	TBFM Metering Publication
TFDM	Terminal Flight Data Manager (TFDM) will provide a variety of Airport information, Surface and flight data, and flow information	TBD
WMSCR	The Weather Message Switching Center Replacement System (WMSCR) collects, processes, stores, and disseminates textual aviation weather products such as PIREPs and Altimeter data.	Publish PIREP
		Publish Altimeter Setting
		WMSCR Report Retrieval Service

Getting Connected

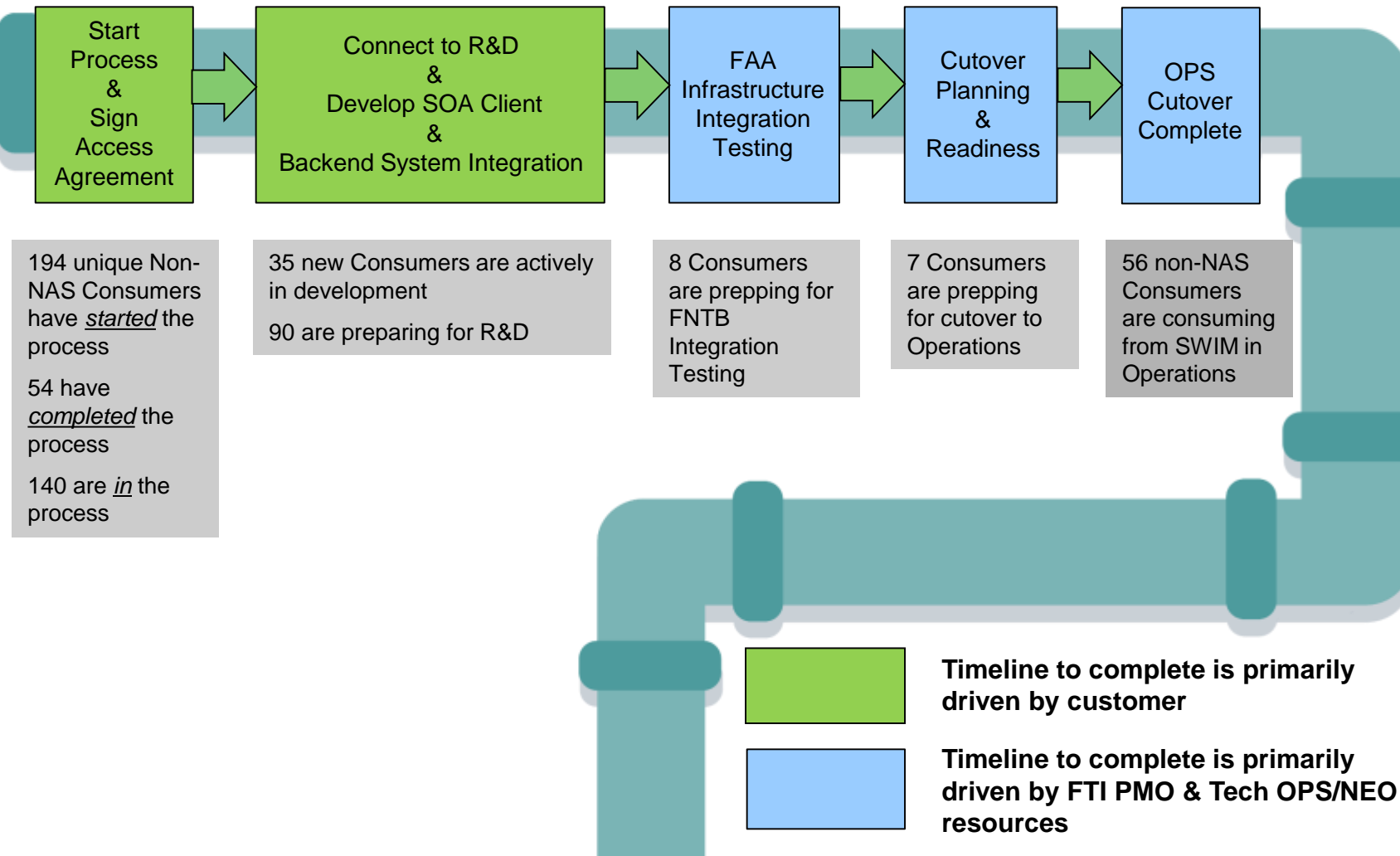
- Top consumer things to do:
 - Obtain authorization to receive the data
 - Develop SOA client
 - Connect and test with SWIM

Process for New External Consumers



Note: Steps are not necessarily serial

External Consumer Pipeline (as of Sept 30, 2015)



Step1: Process Kick-off

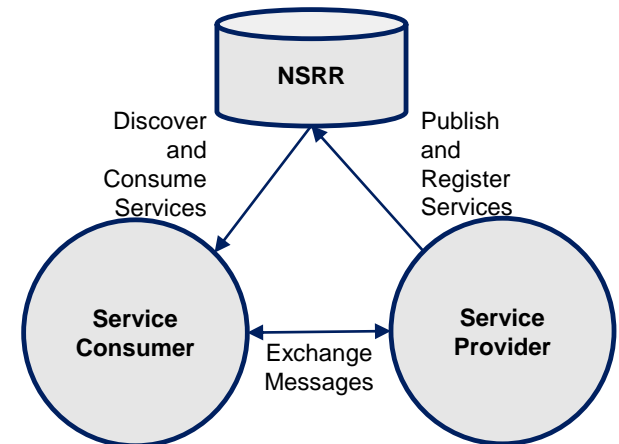
- Send an email to Data-To-Industry@faa.gov as soon as possible
 - Upon receipt of email, FAA will assign a POC to address questions and escalate issues
- Tips to Consumers
 - Sending the email is a critical step in the process
 - Reach out to the FAA POC with questions
 - Your POC will review steps and timelines associated with on-ramping

Step 2: Data Catalog and Access Agreement

- NAS Data Release Board (NDRB)
 - All NAS data available for external distribution is cataloged in data.faa.gov
- Tips to Consumers
 - Create an account at data.faa.gov and sign Access Agreement
 - You will receive an email with your signed copy of the Access Agreement
 - Keep this Access Agreement copy for your records

Step 3: Service Requirements

- NAS Service Registry/Repository (NSRR)
 - Purpose: The NAS Registry and Repository (NSRR) contains the “read-me-first” documents needed to develop Consumer interfaces (e.g. Web Service Description Documents (WSDD), JMS description Documents (JMSDD), WSDLs, XML schemas, etc).
 - SWIM Governance Policies can be found at:
<http://www.faa.gov/nextgen/programs/swim/governance/standards/>
 - FAA POC works with consumer to complete on-ramping form
- Tips to Consumers
 - Prior to client development review NSRR for supporting product documentation
 - Allow 2 business days for account creation
http://www.faa.gov/nextgen/programs/swim/nsrr_form/



Steps 4-6: Establish Connectivity

- Review the “*FTI NBPS User Guide*” Document
 - Understand Section 4 - connection options and availability
 - Understand Section 5 - External End-User Security Responsibilities
 - Understand Section 7 - VPN Technical Requirements
- Provide the following information to FAA POC
 - IP Addresses
 - External IP Address of VPN Concentrator
 - IP Addresses of systems that will be accessing the FAA
- FAA POC provides information for connectivity
- **Tips to Consumers**
 - Identify critical staff (Network administrator and Security administrator)
 - VPN experience
 - Understanding of consumer network, IP addressing, and change management
 - Understanding of any existing connectivity to the FAA
 - Configure VPN prior to VPN Technical Call
 - Verify internal network routing
 - Configure or update encryption domain
 - Map entire subnets for the NEMS servers rather than unique IP addresses

Step 4: Client Development in the Dev Test Environment

- First time External Consumers connect to Dev Test Environment
- Tips to Consumers
 - Start client development in parallel with connectivity to Dev Test Environment
 - Review the NEMS User Guide
 - Determine JMS Client Type as early as possible
 - Identify critical staff to facilitate development
 - Identify experienced Java Message Service (JMS) Developer
 - Review the SWIM Jump start kit
 - To avoid client development process, consider licensing JMS client from third party
 - Work with POC to determine optimum failover testing

Step 5: FAA FTI National Test Bed (FNTB)

- External Consumers are required to connect to the FNTB
 - Establish connectivity to the FNTB Domain
 - Perform FNTB consumer qualification testing with the FNTB NEMS environment
 - Required prior to deploying in the operational NAS environment
 - FNTB qualification ensures that consumer has connectivity and is able to receive messages via NEMS
 - Determine if your desired operational connectivity approach requires additional testing in the FNTB
 - Perform failover tests

Note: Consumers with FNTB verified JMS clients will not need re-verification for additional JMS services.

Step 6 and 7: Prepare for Operations and On-Going Support

- Preparing for Cutover
 - FAA POC will coordinate your connection and cutover, including status checks, contact information for subject matter experts
- After transition to Operational Environment
 - The Network Enterprise Management Center (NEMC) will serve as the SWIM helpdesk for Consumers that have been cut-over to Production
 - NEMC Contact Information:
855-FAA-NEMC (855-322-6362)
Use option 3 for Enterprise Services
24/7/365

Summary (Top Things to do!!)

- Attend the monthly Traffic Flow Management forum
- Attend the monthly SWIM User forum (second Thursday of every month)
- Review documentation as early as possible
- Contact the FAA and establish an agreement!!
- Establish connectivity and build your SOA client
- Connect and Test with SWIM in R&D and FNTB
- Get connected!!
- Reach out to the FAA POC with questions

Other Notes

- ASDI (TFM) feed will remain available until April 2016 - memo forthcoming
 - TFM-DI will also be extended
- TFMDData is not delayed on SWIM
- Audits for ASDI consumers are under review
 - Audits are not required for SWIM data

FAQs for Consumer On-Ramping

- Does SWIM have a backup system?
 - SWIM was built in with redundancy at the information technology level to prevent full system failure
- Does SWIM provide software for consumer onramping?
 - It is up to the consumer to provide software to consume SWIM data
- Will Time Based Flow Management (TBFM) data be available to NAS and Non-NAS subscribers on SWIM?
 - TBFM will be available on SWIM in 2016
- Will Automatic Dependent Surveillance-Broadcast (ADS-B) and other large sets of data be available on SWIM?
 - The SWIM Program Office is working to gain access to ADS-B data
- Is there a charge to subscribe to SWIM data?
 - There is no subscription fee at this time

How to become a SWIM user?

Getting started...

- ✓ Email your request to:
Data-to-Industry@faa.gov
- ✓ Contact Joe Lahoud, SWIM Implementation Lead
Phone: 202-267-7406 (desk)
e-mail: Joseph.Lahoud@faa.gov

Key Takeaways for External User Community

- ✓ Contact the FAA and establish an agreement
- ✓ Establish connectivity and build your SOA client
- ✓ Connect and Test with SWIM in R&D and FNTB

Take advantage of FAA-published user documentation

Listed on the next slide →

FAA Documents and Links

SWIM Background

<http://www.faa.gov/nextgen/swim>

Access Agreement Portal

<http://data.faa.gov>

NSRR Account Request Form

http://www.faa.gov/nextgen/programs/swim/nsrr_form/

SWIM Jumpstart Kit v4.3

http://www.faa.gov/nextgen/programs/swim/documentation/media/swim_standards/JumpstartR4.zip

FTI NBPS User Guide Volume II- For Non-NAS Users

http://www.faa.gov/nextgen/programs/swim/documentation/media/user-guide/FTI_NBPS_User_Guide.pdf

SWIM NEMS User Guide

http://www.faa.gov/nextgen/programs/swim/documentation/media/user-guide/SWIM_NEMS_User_Guide.pdf

Consumer On-Ramping Form

http://www.faa.gov/nextgen/programs/swim/documentation/media/user-guide/External_Consumer_On-Ramping_Form_Template.xls

Questions



Contact Information

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Backup Slides

Current SWIM Product Portfolio (1 of 2)

Flight and Flow Data

Traffic Flow Management System (TFMS): Provides flight data and flow information

- ✓ Flow Constrained Area (FCA) / Flow Evaluation Area (FEA)
- ✓ Airspace Flow Program (AFP)
- ✓ Aeronautical Situation Display to Industry (ASDI)
- ✓ Ground Delay Program (GDP) / Unified Delay Program (UDP)
- ✓ Ground Stops (GS)
- ✓ Reroutes
- ✓ Advisories
- ✓ Collaborative Trajectory Options Program (CTOP)

SWIM Terminal Data Distribution Systems (STDDS): Collects and publishes data from 150+ airports

Surface Movement Event Service

- ✓ Spot-In / Spot-Out Times
- ✓ Wheels-Up / Wheels-Down Times
- ✓ Aircraft ID / Type / Wake Class
- ✓ Position / Heading / Speed / Altitude
- ✓ Mode S / Mode 3A
- ✓ Departure or Arrival Runway
- ✓ Departure Fix for Departures
- ✓ Departure Airport for Arrivals
- ✓ Coasted / Suspended Track No.
- ✓ Fused Track Acceleration
- ✓ ADS-B Information
- ✓ Source Information

Airport Data Service

- ✓ Runway Visual Range (100s of feet)
- ✓ Visibility Trend (steady / incr. / decr.)
- ✓ Runway Edge / Center Lighting

Terminal Automation Info. Service

Flight Plan (FP)

- ✓ Aircraft ID / Type
- ✓ Flight Rules in FP Record
- ✓ FP Status (pending, active, etc.)
- ✓ Flight Type (arr. / dep. / enroute)
- ✓ RNAV Indicator
- ✓ Assigned Runway
- ✓ Entry / Exit Fix

Track

- ✓ Track Status (active / coast / drop)
- ✓ Position / Velocity
- ✓ Beacon Code / Mode C

Tower Departure Event Service

- ✓ Aircraft Parking Gate
- ✓ Pre-Departure Clearance Time
- ✓ Taxi-Start / Takeoff Times

Time Based Flow Management (TBFM): Provides metering information

- ✓ Scheduled Time of Arrival (STAs)
- ✓ Estimated Time of Arrival (ETAs)
- ✓ Meter Reference Elements (MREs) Assignments
- ✓ Airport Configuration Information
- ✓ Satellite Airport Configurations

SWIM Flight Data Publication Service (SFDPS): Provides flight data and updates to clients for filed and active flight plans

- ✓ Flight Plan & Update Information
- ✓ Flight Amendment Information
- ✓ Converted Route Information
- ✓ Cancellation Information
- ✓ Departure Information
- ✓ Aircraft ID Amendment
- ✓ Hold Information
- ✓ Progress Report Information
- ✓ Expected Departure Time Information
- ✓ Position Update Information
- ✓ Tentative Flight Plan Information
- ✓ Tentative Aircraft Identification Amendment Information
- ✓ Tentative Flight Plan Removal
- ✓ Tentative Flight Plan Amendment Information
- ✓ Track / Drop Track Information
- ✓ Interim Altitude Information
- ✓ ARTS Flow Control Track/Full Data Block Information
- ✓ Beacon Code Reassignment
- ✓ Beacon Code Restricted
- ✓ Flight Plan Data Bank (FDB) Fourth Line Information
- ✓ Point Out / Inbound Point Out Info
- ✓ Handoff Status

Airspace Data Publication Service: Published by SFDPS

- ✓ Sector Assignment Status
- ✓ Route Status
- ✓ Special Activities Airspace (SAA)
- ✓ Altimeter Setting

Operational Data Publication Service: Published by SFDPS

- ✓ Instrument Approach / Traffic Count Adjustment
- ✓ Sign In Sign Out
- ✓ Beacon Code Utilization
- ✓ Geographic Beacon Code Utilization

General Information Message Publication Service: Published by SFDPS

- ✓ General Information

Current SWIM Product Portfolio (2 of 2)

Weather Data

Integrated Terminal Weather System (ITWS) Data Publication:

Provides specialized weather products in the terminal area

- ✓ Configured Alerts
- ✓ Forecast Accuracy / Contour / Image
- ✓ ITWS Status Information
- ✓ Gust Front TRACON Map
- ✓ Microburst TRACON Map
- ✓ Tornado Alert
- ✓ Precipitation: 5nm, Long Range, TRACON
- ✓ Wind Shear ATIS
- ✓ Storm Motion: 5NM, TRACON
- ✓ Storm Motion - Storm Extrapolated Positions: 5nm, Long Range, TRACON
- ✓ Tornado Detections Wind Profile
- ✓ Anomalous Propagation (AP) Indicated Precipitation
- ✓ AP Status
- ✓ Gust Front Estimated Time to Impact
- ✓ Hazard Text: 5nm, Long Range, TRACON
- ✓ Runway Configuration
- ✓ Microburst Automatic Terminal Information Service (ATIS)
- ✓ Terminal Weather Text Normal
- ✓ Terminal Weather Text Special

Corridor Integrated Weather System (CIWS) Data Publication*:

Provides specialized 3D storm related weather information in the En Route area

- ✓ Vertically Integrated Liquid (VIL) Mosaic (1km resolution)
- ✓ VIL 2-hr. Forecast
- ✓ Echo Tops Mosaic (1 km resolution)
- ✓ Echo Tops 2-hr. Forecast
- ✓ Satellite Mosaic
- ✓ Storm Info: Echo Top Tags, Leading Edges, Motion Vectors
- ✓ VIL Forecast Contours (Std. Mode)
- ✓ VIL Forecast Contours (Winter Mode)
- ✓ Echo Tops Forecast Contours
- ✓ Growth & Decay Contours
- ✓ Forecast Accuracy: Echo Tops, Std. Precipitation, Winter Precipitation

Weather Message Switching Center Replacement (WMSCR)

Publications: Provides NWS textual aviation weather products

- ✓ Transmission of Voice Pilot Reports (PIREPs) to WMSCR
- ✓ Altimeter Settings
- ✓ Stored PIREPs

Enhanced Weather Information Network System

- ✓ Current Icing Product (CIP)
- ✓ Weather Research and Forecasting-Rapid Refresh (WRF-RR) Model Data
- ✓ North American Mesoscale (NAM) Model Data
- ✓ Global Forecast System (GFS) Model Data
- ✓ Airmen's Meteorological Information (AIRMET)
- ✓ National Convective Weather Forecast (NCWF)
- ✓ National Convective Weather Diagnostic (NCWD)
- ✓ Aviation Routine Weather Report (METAR)
- ✓ Significant Meteorological Information (SIGMET)
- ✓ Collaborative Convective Forecast Product (CCFP)

Weather and Radar Processor (WARP) Publications

- ✓ Next Generation Weather Radar (NEXRAD)

Aeronautical Data

Aeronautical Information Management (AIM) Special Use Airspace (SUA) Data Exchange:

Provides notification and status regarding airspace

- ✓ SUA Data, dynamically provided in the Aeronautical Information Exchange Model (AIXM) standard
- ✓ AIXM SUA Definitions

Notices to Airmen (NOTAM) Distribution Service

- ✓ Digital NOTAMs AIXM 5.1

***Service in development or on-ramping process**

Current SWIM External Consumers

Airports, FAA Facilities
ATCSCC
Atlanta Airport Authority
CGH OEAAA
CRCT
MS Boston TRACON Viewer
MS Chicago TRACON Viewer
MS Viewer A90
MS Viewer ASH/EON
MS Viewer C-90
MS Viewer ELG
MS Viewer I-90
MS Viewer N-90
MS Viewer NCT
MS Viewer PCT
MS Viewer SDFZ
MS Viewer Southern Cal TRACON
MS Viewer ZLA
MS Viewer ZNY
Non FAA Government Entities
DoD Aeronautical Information Portal (DAIP)
Seattle Port Authority
Airlines
American Airlines
Delta
FedEx
JetBlue (Passur)
United Airlines
UPS
USAIR

Industry
ARINC
Alliance
Boeing ATM
Brueel & Kjaer
DataComm Benefits and Metrics
Embry Riddle
FlightAware
FlightStats
FlightView
Marks Aviation
Metron
MIT - Lincoln Labs
MITRE
MOSAIC ATM
Northrop Grumman
Raytheon
Rocket Route
Saab Sensis
Sabre
SATCOM
Schneider Electric / Telvent
Terminal Systems
Textron
Thales
Veracity
Volpe
Woolpert
WSI
Wx Sonalysts